# SCIENTIFIC APPARATUS AND LABORATORY METHODS

## APPARATUS FOR DUSTING SULFUR ON PLANTS IN CONTROLLED AMOUNTS

WHILE making comparative studies on different brands of sulfur, it became necessary to secure dusting apparatus that would deliver quantitatively small amounts of sulfur to the under surface of leaves. Since many brands of sulfur stick tenaciously to dusting equipment and at the same time produce little or no fog, the common methods of applying dust under laboratory conditions were not satisfactory. The apparatus herein described has been satisfactory for the purpose intended and may be of value to other workers.

A dust gun was made from a small glass cylinder 80 mm by 15 mm (A) fitted with two corks. Into one cork was inserted a metal tube with a 1 mm opening which admitted compressed air. The air was under 20 pounds pressure and controlled by a valve (B) obtained from a cheap spray gun. From the other cork led a glass tube fire polished to a 1 mm opening. This glass tube connected by means of a rubber tube (C) with the dusting chamber. The dusting chamber consisted of a large wooden box enclosing a phonograph turn table (D) which was used to transmit power to a cookie can (E) held at a 45° angle with the open end down. Plants grown in flower pots were inserted into the cookie can and revolved as the phonograph turned. The sulfur came into the dusting chamber, hit a glass plate (F) and diffused evenly over the revolving plant. When filling the glass dust gun, a small rod was held in the center of the gun and was removed later. This left a small cylinder of dust, which was gradually removed in its entirety by the force of air passing through the center of the sulfur cylinder on its way to the dusting chamber.

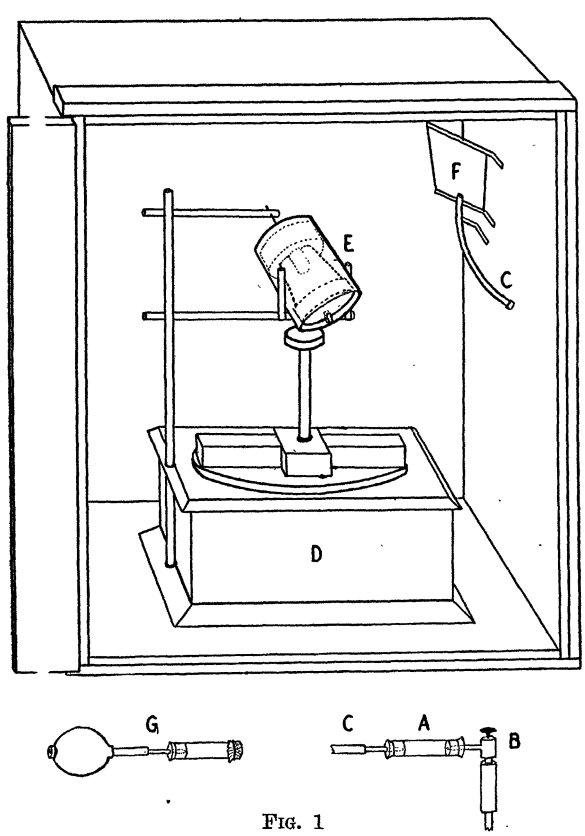


FIG. 1

The dust gun may be adapted into a very useful small hand duster (G) by attaching a rubber bulb to the glass tube and by placing a cheese cloth over the other end. A rod is held in the center of the glass cylinder while filling in the same manner as described above. The cheese-cloth serves as a screen to prevent coarse particles from leaving the duster and at the same time diffuses any large puffs of dust that might be emitted.

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## A NEW STAINING METHOD FOR STRUCTURES OF THE SPINAL CORD

DISADVANTAGES in staining of cytons and Nissl bodies (chromophilic bodies) of the spinal cord may be overcome by employing dyes that contain greater amounts of methylene violet. Polychromed methylene blue does not contain sufficient methylene violet to prevent fading, especially in combination with acidic contrast dyes, such as eosin. The Nissl methylene blue stain is polychromed with castile soap and allowed to age for some time before use, but fading occurs in a short time if an acidic counterstain is used. Cytons become destained within one week.

By employing the Giemsa stain and differentiating in 95 per cent. and absolute alcohol, a brilliant effect was obtained. However, fading within a few days was noticed when an acidic counterstain was employed.

In order to obtain the advantages of selectivity and permanence the following mixture of dyes and timing was arrived at:

Five parts of a solution of Wright's blood stain in 95 per cent. denatured ethyl alcohol to one part of a standard solution of Giemsa was prepared. The spinal cord of a steer, fixed in 10 per cent. acid-free formaldehyde, was sectioned at 10 mu. Slides were passed through xylol and graded alcohols to distilled water and flooded with the above mixture of dyes for two minutes. The dye was then diluted with an equal amount of distilled water for two minutes and the slides then immersed in fresh distilled water for one minute. The sections were passed immediately into 80 per cent. alcohol for 15 seconds and the dehydration rapidly completed in 95 per cent. and absolute. Sections were cleared in neutral xylol and mounted in neutral balsam.